

A NEW AND UNIQUE OPHIDIINE CUSK-EEL FROM THE PANAMIC REGION OF THE EASTERN NORTH PACIFIC

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ABSTRACT

A new species of cusk-eel of the genus *Ophidion* is described from the continental shelf waters of the Panamic region of the eastern Pacific Ocean. The species does not appear to be closely related to any other eastern Pacific or western Atlantic cusk-eel. Superficially it manifests a striking resemblance to two distantly related ophidiids, *Lepophidium pardale* and *Otopholidium indefatigabile*. A dichotomous key to the patterned species of eastern Pacific cusk-eels is included.

Cusk-eels (family Ophidiidae) of the Panamic region of the eastern Pacific Ocean are comprised of two subfamilies, the Lepophidiinae and the Ophidiinae. Robins (1962) reviewed the genus *Lepophidium* and Robins and Lea (1978) discussed a pattern of speciation in the *L. microlepis* complex, recognizing three subspecies. The genus *Otopholidium* is represented by a single species, *Otopholidium indefatigabile* Jordan and Bollman, 1890, which is known from widely scattered localities ranging from the Sea of Cortez (Gulf of California) to the Gulf of Panama and the Cocos and Galapagos Islands (type locality). The genus *Ophidion* is not nearly as well understood systematically as the above two taxa. Eastern Pacific ophidiine cusk-eels were reviewed by Lea (1980) as part of his dissertation project, while studying at the University of Miami, under the guidance of Dr. C. R. Robins to whom this contribution is dedicated. Four species of *Ophidion* are presently known from the eastern Pacific: *O. galeoides* (Gilbert, 1890), *O. scrippsae* (Hubbs, 1916), *O. iris* Breder, 1936, and *O. fulvum* Hildebrand and Barton, 1949 (Lea 1995). A new and unique species of cusk-eel is herein described and provisionally placed in the genus *Ophidion*.

MATERIALS AND METHODS

Methods of counts and measurements follow Robins (1962). Median fin and vertebral counts were taken from radiograph. Pectoral fin elements were stained with Alizarin red to enhance enumeration. Museum abbreviations follow Leviton et al. (1985).

Ophidion imitator new species Lea Figures 1 and 2

Synonymy. Two known references to this species.

Ophidion sp. nov. A, Bussing and López, 1993, Demersal and pelagic inshore fishes of the Pacific coast of lower central America, p. 76–77 (tiger cusk eel, description, drawing).

Ophidion sp., Allen and Robertson, 1994, Fishes of the tropical eastern Pacific, p. 75 (spotted brotula, description, photograph).

Holotype.—SIO 73–297; 163.1 mm SL, male. Nicaragua: sw of Corinto, lat 12°09.0'N, long 87°32.0'W, 112 m, 17 April 1973. Taken with eight other specimens which are designated as paratypes.

Paratypes.—All specimens listed under material examined with the exception of the holotype.

Diagnosis.—A cusk-eel with dark brown to black blotching and spotting on head and dorsal and lateral portion of body; scales with anguilliform arrangement on body; ethmoid spine blunt; pelvic filaments long; gill rakers numerous; with pre-juvenile stage.

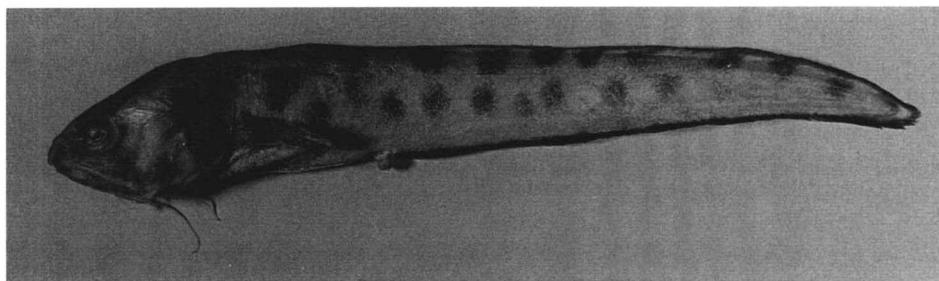


Figure 1. Photograph of *Ophidion imitator* new species. SIO 73-279, 155 mm SL, paratype.

Description.—Scales ovoid, anguilliform arrangement on body; head naked; ethmoid process not developed into spine, blunt to touch; pyloric caeca lacking.

Dorsal rays 135–163; anal rays 112–139; precaudal vertebrae 15–16; caudal vertebrae 54–60; total vertebrae 70–76.

Pectoral rays 25–28; total gill rakers on first arch 12–15, 3–4 rudiments on upper limb and 9–12 relatively long rakers on lower limb, longest raker at angle, rakers decreasing progressively in length from angle forward; caudal rays $4+5=9$; branchiostegals 7. Meristic data summarized in Table 1.

Body proportions (in hundredths of standard length) given in Table 2.

Pelvic fins long, 1.6–1.8 length of pectoral fins. Pelvic filaments unequal in length, outer branch about 1.6–1.7 inner.

Teeth on premaxillary, palatine, vomer, and dentary bones; in several series on each bone. Snout overlapping lower jaw. Mouth slightly angled upward, approximately 15°. Lateral line incomplete, 78–83% SL. Orobranchial chamber dusky. Sub-nasal flaps slightly developed, extend onto premaxillaries. Foregut black, stomach non-pigmented, and hindgut varying from being covered with scattering of melanophores to completely black. Swim bladder jug-like sac in males with relatively large posterior foramen, small “rocker bone” attached anteriorly. Swim bladder simple sac in females.

Coloration in Alcohol.—Boldly marked species with large dark brown to black blotches regularly arranged over dorsal and lateral portion of body; blotches normally forming two to three rows, one row above lateral line and usually two below. Ventrally no blotching. Background pigmentation whitish. Some spotting and blotching on head, not nearly as conspicuous as on body. Often duskiness to head, especially region of snout, suborbital area, and lower jaw. Margins of dorsal and anal fins edged in black, fore-part of dorsal and entire anal most pronounced. Peritoneum pale to dusky. Bold blotching which characterizes this species found only in adult stage. Juvenile specimens begin to show pattern of dorsal blotching at approximately 90 to 100 mm SL. Prejuvenile stage shows no sign of blotching,

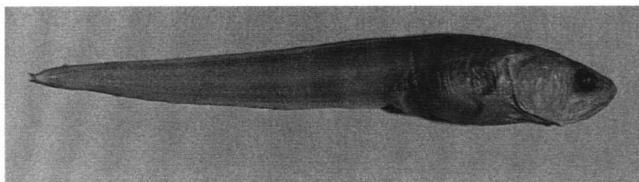


Figure 2. Photograph of *Ophidion imitator* new species. Prejuvenile, LACM 9812-5, 104 mm SL, paratype.

Table 1. Meristic data for *Ophidion imitator* new species

Dorsal rays																												
135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163
1	1	1	2		2				1	2					1	1	1	2	1	1						1		
Anal rays																												
112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	
1	1	1	2		1	3			1	1			1	3			1	1	1							1		
Vertebrae																												
Precaudal		Caudal												Total														
15	16	54	55	56	57	58	59	60			70	71	72	73	74	75	76											
1	19	1	1	7	1	4	5	1			1	1	1	7	2	3	5	1										
Gill rakers																												
Upper limb		Lower limb						Total rakers						Pectoral rays														
3	4	9	10	11	12	12	13	14	15		25	26	27	28														
44	9	9	31	11	2	7	29	12	5		2	2	2	2														

instead body profusely covered with a peppering of melanophores. Body wall surrounding coelomic cavity often translucent, revealing internal organs. Head wedge-shaped. Angle of mouth more pronounced in prejuvenile than adult stage.

Etymology.—From the Latin *imitor*: to imitate, emulate, mimic, resemble. In reference to its striking resemblance to *Lepophidium pardale* and, to a lesser degree, *Otophidium indefatigabile*. *Imitator* is treated as a noun in apposition.

Geographic Distribution.—Known from off the tip of Baja California and Sinaloa (off Mazatlán), Mexico south to the Gulf of Panama (Fig. 3). The species would be expected to occur off Colombia, Ecuador, and northern Peru.

Table 2. Morphometric data for *Ophidion imitator* new species (Numbers represent percentage of standard length)

Catalogue number	SIO 73-248	LACM 30757-1	UCR 337-15	UCR 337-15	SIO 73-279	UCR 337-15	SIO 73-279
Standard length mm	109.9	127.2	127.5	143.8	155.2	155.5	163.1
Head length	22	23	23	23	25	24	24
Predorsal distance	28	26	28	29	29	29	27
Preanal distance	40	40	41	39	40	40	40
Occipital distance	16	15	16	15	16	15	16
Depth of body:							
at dorsal-fin origin	16	13	16	13	15	14	14
at anal-fin origin	10	13	13	11	12	12	12
at occiput	13	15	14	13	14	13	13
Pectoral fin length	11	11	12	11	12	13	12
Pelvic-fin length:							
outer	16	14	20	19	18	18	18
inner	10	09	12	12	10	10	11
Snout length	04	04	04	04	04	04	04
Postorbital length	13	15	13	14	15	14	15
Orbital diameter	05	06	06	05	05	05	05
Bony interorbit	03	03	03	03	03	03	03
Maxillary length	11	10	11	11	11	11	11
Lateral line length	78	86	79	80	80	78	83

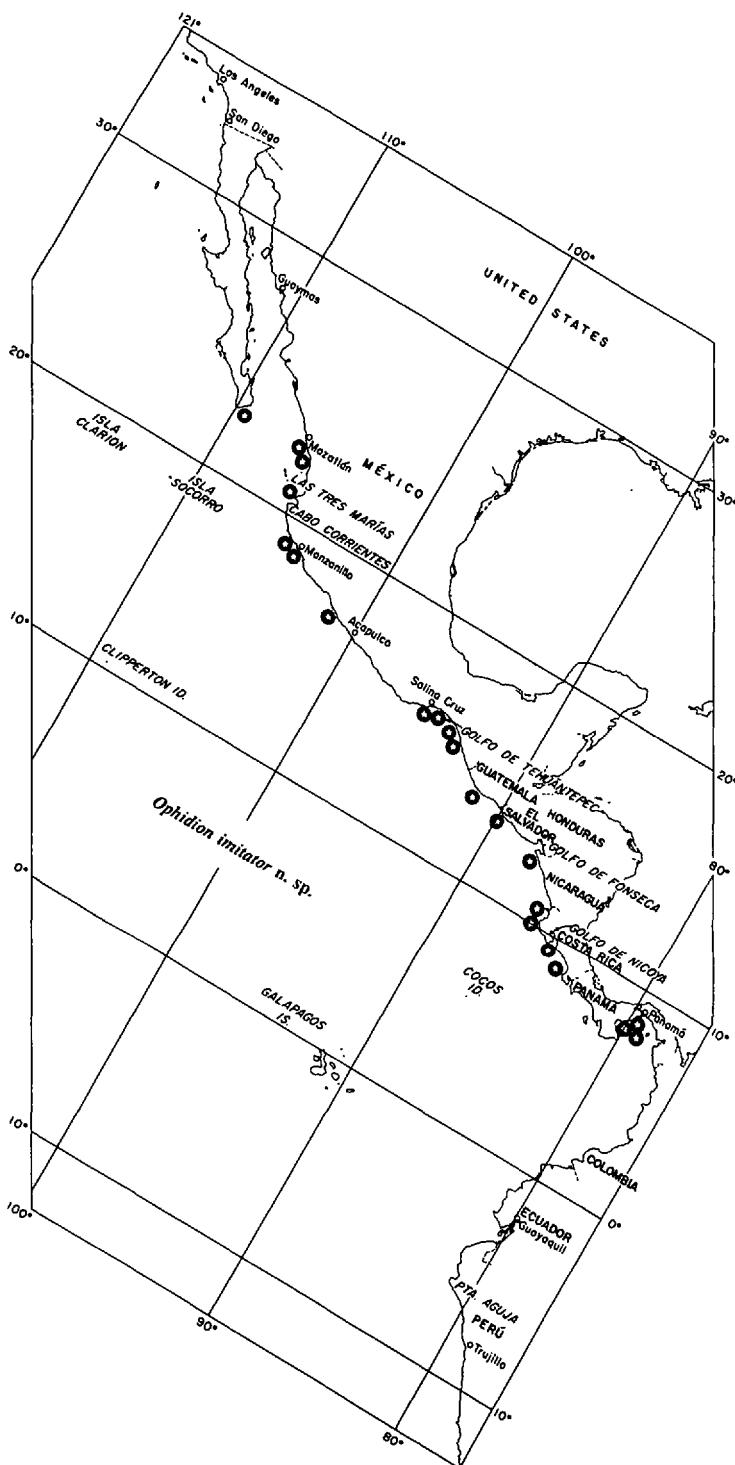


Figure 3. Localities of capture of *Ophidion imitator* new species. Individual symbols (circled stars) in some cases represent more than one collection (e.g. Gulf of Tehuantepec and Gulf of Panama). See material examined for details regarding locality data.

Bathymetric Distribution.—Subadult and adult fishes have been taken at depths ranging from 18 to at least 112 m. The prejuvenile stage is nektonic and has been collected by night light, midwater trawl, and bottom trawl from near-shore to oceanic waters. Mud and sand were primary bottom types when this parameter was noted.

KEY TO THE PATTERNED SPECIES OF EASTERN PACIFIC CUSK-EELS

- 1a. Body with spotting (spots < eye dia.) or longitudinal striping, spots or stripes highly variable and tending to form 3 or 4 longitudinal series 2
- 1b. Body with bold blotching (blotches approximating eye dia.), forming 2 to 3 irregular rows on dorsal and lateral portion of body 3
- 2a. Body distinctively marked with numerous olive-brown spots (tendency toward three to four longitudinal series often pronounced); head normally with spotting, gill rakers 7 to 9 on lower limb of first arch *Chilara taylori* (Girard, 1858)
temperate north Pacific
- 2b. Body with two to three longitudinal series of brownish stripes; head without spotting; gill rakers 4 (rarely 5) on lower limb of first arch *Ophidion galeoides* (Gilbert, 1890)
outer coast of Baja California, Gulf of California to Gulf of Panama
- 3a. Snout with a strong forward projecting ethmoid spine; needle-like *Lepophidium pardale* (Gilbert, 1890)
Gulf of California to Peru
- 3b. Snout without a strongly projecting ethmoid spine; blunt, not needle-like 4
- 4a. Body relatively deep, body depth 16–18% of standard length at anal-fin origin; gill rakers 4 on lower limb *Otopholidum indefatigabile* Jordan and Bollman, 1890
Gulf of California to Gulf of Panama and Cocos and Galapagos Islands
- 4b. Body elongate, body depth 10–13% of standard length at anal-fin origin; gill rakers 9–12 on lower limb *Ophidion imitator* new species

Material Examined.—MEXICO: Baja California Sur: CAS 30872 1:133. Sinaloa: LACM 9812-5 7:91–117. SIO 62–77 32:77–117. Nayarit: SIO 63–983 1:64. Colima: SIO 70–160 4:54–76. SIO 70–161 1:57. W 60–185 3:53–60. Guerrero: SIO 73–248 2:52–110. Gulf of Tehuantepec (Oaxaca and Chiapas): SIO 63–510 1:84. SIO 63–513 9:68–125. SIO 63–514 2:95–123. SIO 63–518 6:85–133. SIO 63–526 6:91–135. SIO 65–165 7:74–108. SIO 65–166 6:78–102. SIO 65–167 1:88. SIO 79–111:88–130. SIO 91–98 1:149. GUATAMALA: SIO 73–272 2:112–129. EL SALVADOR: SIO 73–275 4:111–121. NICARAGUA: SIO 73–279 9:121–163 [Holotype—163]. COSTA RICA: LACM 30757–1 1:128 (originally UCR 354). SIO 59–150 1:67. UCR 337–15 3:128–156. UCR 687–5 1:86. PANAMA: Gulf of Panama. GCRL 13959 3:134–175. UF 226022 1:123. UF 226030 1:84. UF 226038 1:170. UF 226059 2:137–151. UF 226074 2:98–105. UF 226129 1:135. UF 226137 1:136. UF 226142 1:169. UF 226236 4:136–160. UP 587 1:171. UP 679 2:188–191. OTHER: SIO 49–79 1:66.

DISCUSSION

The description of *Ophidion imitator* brings to five the number of species of *Ophidion* from the Panamic eastern Pacific. Several other plain (non-patterned) cusk-eels from this geographic region are in the process of description. The striking similarity in color pattern between *Ophidion imitator*, *Lepophidium pardale*, and *Otopholidum indefatigabile* appears to be an extraordinary example of convergence.

Ophidion imitator, especially the prejuvenile stage, has been found as forage items in the stomachs of swordfish, yellowfin tuna, and skipjack tuna. In most cases the collection of these pelagic fishes was in oceanic waters.

The relatively high meristic values of *Ophidion imitator*, including the unusually high number of gill rakers, and the unique prejuvenile stage allow only for provisional placement of the species in *Ophidion*. The genus *Ophidion* is in need of review and as presently composed may well be paraphyletic.

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